

THE
ONTARIO WATER RESOURCES
COMMISSION
WATER POLLUTION SURVEY
VILLAGE OF JARVIS

1965

MOE
JAR
WAT
ATGL

c.1
a aa

Copyright Provisions and Restrictions on Copying:

This Ontario Ministry of the Environment work is protected by Crown copyright (unless otherwise indicated), which is held by the Queen's Printer for Ontario. It may be reproduced for non-commercial purposes if credit is given and Crown copyright is acknowledged.

It may not be reproduced, in all or in part, for any commercial purpose except under a licence from the Queen's Printer for Ontario.

For information on reproducing Government of Ontario works, please contact ServiceOntario Publications at copyright@ontario.ca



Environment Ontario
Laboratory Library
125 Main Street Rd.
Etobicoke, Ontario M9P 3V6
Canada

R E P O R T

ON A

WATER POLLUTION SURVEY

OF THE

VILLAGE OF JARVIS

APRIL - 1965

ONTARIO WATER RESOURCES COMMISSION

MOE
JAR
WAT
ATGL

atgl

TABLE OF CONTENTS

I	INTRODUCTION	1
II	GENERAL	1
III	WATER USES	1
	1. Domestic Supplies	1
	2. Other Water Uses	2
IV	WATER POLLUTION	2
	1. Domestic Waste Disposal	2
	2. Refuse Disposal	3
	3. Industrial Waste Disposal	4
	4. Discussion of Sample Analyses	4
V	PROPOSED WATER AND SEWAGE WORKS	5
VI	SUMMARY AND CONCLUSIONS	5
VII	RECOMMENDATIONS	6

APPENDIX

ANALYTICAL RESULTS & TABULATION OF OUTFALLS

EXPLANATION & SIGNIFICANCE OF LABORATORY ANALYSES

VILLAGE PLAN (Showing Outfall Location)

R E P O R T

ONTARIO WATER RESOURCES COMMISSION

I INTRODUCTION

A water pollution survey was made in the Village of Jarvis on October 14, 1964. The OWRC conducts such surveys routinely for an evaluation of any existing or potential sources of pollution. Such a survey is of value in considering the water and sewage works requirements in the municipality.

II GENERAL

The village has a population of approximately 780 and is situated at the junction of highways 3 and 6, eight miles north-east of Port Dover.

A tributary of the Sandusk Creek rises at the edge of the village and flows through the centre of the community. All surface drainage within the village discharges to the creek. Soil conditions are of the heavy clay type.

The most significant industry within the municipality is the Marshall Dairy Limited. A large number of residents commute to neighbouring municipalities for employment.

III WATER USES

1. Domestic Supplies

At the request of Dr. M. Krawetz, Medical Officer of Health of Jarvis, a survey of a number of the individual water supplies was made

by the Environmental Sanitation Branch of the Ontario Department of Health during the latter part of 1963.

Samples for bacteriological analyses were taken from 13 dug wells and 13 drilled wells. It was estimated that 60 to 70 families use these wells as their source of drinking water.

Summary of Analyses (By Ontario Department of Health)

No. of Samples Taken	56
No. Containing Total Coliform Organisms (MPN/100 c.c.)	28
No. Containing E. Coli (MPN/100 c.c.)	20

It was reported that the samples taken were representative of the wells in use within the village. The above results would therefore indicate that the water quality of many of the wells is unsatisfactory.

2. Other Water Uses

The stream is unsuitable for recreational use due to its insanitary condition and minimal flows.

Downstream of the village the stream serves as a source of drinking water for farm animals.

IV WATER POLLUTION

1. Domestic Waste Disposal

There are no sanitary sewers or sewage treatment facilities and only parts of the principal streets are provided with storm

sewers. Premises in the village are served by septic tanks or cesspools. Many of the systems discharge to the creek directly or via a storm sewer. Inadequate space as well as poor soil porosity is responsible, in part, for the defective sewage disposal installations.

2 Refuse Disposal

The municipal refuse disposal area is located on a former railway right-of-way at the north end of the village. The open-face type dump is situated along the edge of a gully which is approximately 30 feet deep and 100 feet wide at the top. Dumping was commenced at the lower end of the gully.

A 30 inch concrete tile drain has been installed along the bottom of the gully in order to dispose of upgrade drainage. This drain discharges to the tributary of Sandusk Creek which flows through the village. Part of the drain has already been covered with refuse.

At the time of inspection there was no discharge from the drain. Based on previous experience, unless watertight joints are utilized, leachate from the dump may gain access to the drain.

It is probable that the site is located in the upper part of a ground water recharge area which would serve the village and it should therefore be considered a potential pollution hazard. However, since the local soil conditions are of the clay type, the downward movement of percolating liquid is not as likely. Since the village

is considering a water works with a lake supply, local ground water pollution will not be as serious.

In the future, this refuse disposal area will be under surveillance by the Commission.

3. Industrial Waste Disposal Marshall Dairy Limited

Wastewater from the above milk plant operation is disposed of by a spray irrigation system on adjacent farm land during the warm weather months. In the winter, the waste flow is directed to a septic tank and underdrained tile bed system. There is an effluent to the creek during this period.

4. Discussion of Sample Analyses

Grab samples were taken from all flowing discharges to the creek as well as from the creek downstream of the village. Included in the appendix is a list of all the outfalls located, the laboratory results, as well as an interpretation of the analyses performed. Reference should be made to the appended plan of Jarvis for location of the outfalls and sampling points.

The BOD and coliform count of the samples from the Peel St. storm sewer and the drainage ditch (JA-3-D) were in excess of the Commission objectives. These results were indicative of raw sewage. The analyses of samples collected at SJ-12.0 and SJ-11.1 should be compared to the Commission objectives of 4 ppm and 2400 organisms

per 100 ml respectively for BOD and coliform organisms. The latter sample which was taken one mile downstream from the village shows evidence of gross contamination. This is attributed to the numerous waste discharges to the creek in the Village of Jarvis.

V PROPOSED WATER AND SEWAGE WORKS

A consulting engineering firm has been retained to design water and sewage works for the municipality. It is the desire of the municipality to install both facilities concurrently. It is realized that the installation of only a water works system would greatly aggravate the present insanitary conditions of the watercourses in the municipality.

Test drilling has indicated local ground water resources to be unsuitable for a municipal supply. At present the following two alternatives are under consideration:

(a) Secure a connection to the Hagersville R.C.E. pipeline, which is now controlled by the Crown Assets Disposal Corporation, or

(b) Proceed with construction of a pipeline to Lake Erie.

VI SUMMARY AND CONCLUSIONS

The water pollution survey in the Village of Jarvis has demonstrated that partially treated domestic sewage is being discharged

into a tributary of Sandusk Creek from a number of municipal storm sewer and private drain outlets. As flow is minimal during summer months, the stream, in addition to being grossly polluted has the appearance and odour comparable to an open cesspool throughout the village. The only solution is the provision of a municipal sewage works.

The unsatisfactory quality of the private drinking water supplies points to the urgent need for a municipal water works system. The village council has recognized the need for such a project and has been considering the provision of both water and sewage works.

The municipality should ensure that leachate from the refuse disposal area does not contaminate the local watercourse.

VII. RECOMMENDATIONS

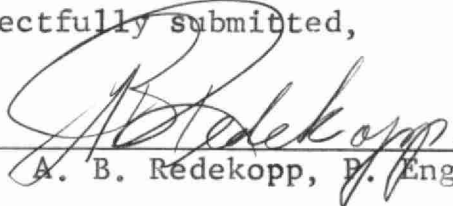
1. The Village of Jarvis should seriously consider the provision of both water and sewage works.
2. Preventative measures should be taken in order that the refuse disposal area does not contaminate the local watercourse.

Prepared by:

A. C. Cooper

All of which is respectfully submitted,

District Engineer:


A. B. Redekopp, P. Eng.

ak

Approved by:

K. H. Sharpe, Director.

APPENDIX
ANALYTICAL RESULTS
VILLAGE OF JARVIS

<u>Sampling Pt. No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Solids(ppm)</u>			<u>Turbidity in Silica Units</u>	<u>M.F. Coliform Count/100 ml</u>
SJ-12.4	Sandusk Creek at Mary Street	10/14/64	No Flow					
SJ-12.3-WS-4	Storm sewer, Church St. (S.W. Side)	" " "	Insufficient Flow to Sample-Sewage Solids Present					
SJ-12.3-WS-3	Storm sewer, Church St. (N.W. Side)	" " "	"	"	"	"	"	"
SJ-12.3-WS-2	Storm sewer, Church St. (N.E. side)	" " "	"	"	"	"	"	"
SJ-12.3-WS-1	Storm sewer, Lydia St. (N. Side)	" " "	"	"	"	"	"	"
SJ-12.3-W-1	Storm sewer, Lydia St. (S. Side)	" " "	No Flow					
SJ-12.3	Sandusk Creek, Jarvis Branch @ Lydia St.	" " "	160	1250			59	40,000,000
SJ-12.2-WS-3	Storm sewer, Main St. (S.W. Side)	" " "	Insufficient Flow to Sample-Sewage Solids Present					
SJ-12.2-W	Storm sewer, Main St. (N.W. Side)	" " "	No Flow					
SJ-12.2-WS-2	Storm sewer, Main St. (N.E. Side)	" " "	Insufficient Flow to Sample-Sewage Solids Present					
SJ-12.2-WS-1	Storm sewer, Main St. (E. Side)	" " "	"	"	"	"	"	"

<u>Sampling Pt. No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Total</u>	<u>Solids Susp.</u>	<u>Diss.</u>	<u>Turbidity in Silica Units</u>	<u>M.F. Coliform Count/100 ml.</u>
SJ-12.1-PS-4	Private Drain	10/14/64		Insufficient Flow to Sample-Sewage Solids Present				
SJ-12.1-PS-3	" "	" " "		"	"	"	"	"
SJ-12.1-PS-2	" "	" " "		"	"	"	"	"
SJ-12.1-PS-1	" "	" " "		"	"	"	"	"
SJ-12.1-WS	Peel St. Storm Sewer	" " "	230	1164	109	1055		42,000,000
SJ-12.0-W	W. Walpole St. Storm sewer	" " "		No Flow				
SJ-12.0	Sandusk Cr., Jarvis Branch @ Hwy.No.3	" " "	10	1012			32	43,000
JA-3-D	Drainage Ditch just of Park St.	" " "	62	830	86	744		32,000,000
JA-5-D	Drainage Ditch off James St.			No Flow But Sewage Solids Present				
SJ-11.1	Sandusk Cr., Jarvis Branch at 1st.Conc.Rd. Downstream of Jarvis	" " "	8.0	1782			50	180,000

APPENDIX

EXPLANATION AND SIGNIFICANCE OF LABORATORY ANALYSES

ALL THE LABORATORY TESTS INCLUDED IN THIS REPORT WERE PERFORMED AT THE ONTARIO WATER RESOURCES COMMISSION LABORATORY IN TORONTO.

A. BACTERIOLOGICAL EXAMINATION

THE MEMBRANE FILTER TECHNIQUE IS USED TO OBTAIN A DIRECT ENUMERATION OF COLIFORM ORGANISMS. THESE ORGANISMS ARE NORMAL INHABITANTS OF THE INTESTINES OF MAN AND OTHER WARM-BLOODED ANIMALS. THEY ARE ALWAYS PRESENT IN LARGE NUMBERS IN SEWAGE AND ARE GENERALLY MINIMAL IN OTHER WATER POLLUTANTS.

THE RESULTS OF THE EXAMINATIONS ARE REPORTED AS "M.F. COLIFORM COUNT PER 100 ML".

THE COMMISSION'S OBJECTIVE FOR STREAM SANITATION IS A COLIFORM DENSITY OF NOT GREATER THAN 2,400 ORGANISMS PER 100 ML.

B. SANITARY CHEMICAL ANALYSES

BIOCHEMICAL OXYGEN DEMAND (BOD):

BIOCHEMICAL OXYGEN DEMAND IS REPORTED IN PARTS PER MILLION (PPM), AND IS AN INDICATION OF THE AMOUNT OF OXYGEN REQUIRED FOR THE STABILIZATION OF DECOMPOSABLE ORGANIC MATTER IN THE WATER. THE COMPLETION OF THE LABORATORY TEST REQUIRES FIVE DAYS, UNDER THE CONTROLLED INCUBATION TEMPERATURE OF 20°C.

THE COMMISSION OBJECTIVE FOR STREAM WATER QUALITY IS AN UPPER LIMIT OF 4 PPM.

SOLIDS:

THE VALUE FOR TOTAL SOLIDS, EXPRESSED IN PARTS PER MILLION (PPM), IS THE SUM OF THE VALUES FOR THE SUSPENDED AND THE DISSOLVED MATTER IN THE WATER. THE CONCENTRATION OF SUSPENDED SOLIDS IS GENERALLY THE MOST SIGNIFICANT OF THE SOLIDS ANALYSES IN REGARD TO STREAM WATER QUALITY.

THE EFFECTS OF SUSPENDED SOLIDS IN WATER ARE REFLECTED IN DIFFICULTIES ASSOCIATED WITH WATER PURIFICATION, DEPOSITIONS IN STREAMS, AND INJURY TO THE HABITAT OF FISH.

WHERE SUSPENDED SOLIDS VALUES ARE LESS THAN 20 PPM LABORATORY DIFFICULTIES ARE EXPERIENCED AND THE TURBIDITY IS DETERMINED INSTEAD.

TURBIDITY:

TURBIDITY IS CAUSED BY THE PRESENCE OF SUSPENDED MATTER, SUCH AS CLAY, SILT, FINELY DIVIDED ORGANIC MATTER, PLANKTON AND OTHER MICROSCOPIC ORGANISMS IN WATER. IT IS AN EXPRESSION OF THE OPTICAL PROPERTY OF A SAMPLE AND RESULTS ARE REPORTED IN "SILICA UNITS".



FIG 8
VILLAGE OF JARVIS
WATER POLLUTION SURVEY
 COUNTY OF HALDIMAND
 SCALE
 0 200 400 FEET
 ONTARIO WATER RESOURCES COMMISSION
 TORONTO JAN 1962 1A
 DWG No 60-3-4

[illegible]

Environment Ontario
Laboratory Library
125 Resources Rd.
Etobicoke, Ontario M9P 3V6
Canada